REMARKS

In the Office Action, the Examiner rejected claims 1-3, 6-8, and 11-14 under 35 U.S.C. § 102(e) as being anticipated by USP 6,442,743 issued to Sarrafzadeh et al (Sarrafzadeh). In this Amendment, Applicants have amended claims 1, 4, 5, 6, 9, and 10 to correct certain informalities in these claims. Applicants have also added new claims 15-22. Accordingly, claims 1-22 will be pending after entry of this Amendment.

I. Rejection of the Claims 1-3, 6-8, and 11-18 Under § 102(e)

Claims 1-3, 6-8, and 11-14 stand rejected under § 102(e) as being anticipated by Sarrafzadeh. Applicants respectfully traverse this rejection.

Each of these claims recites a method that pre-computes routes for nets in a region of a circuit layout. Claims 2, 3, 6-8, and 11-14 are dependent directly or indirectly through claim 1. The method of claim 1 defines a set of partitioning lines for partitioning the region into a plurality of sub-regions during a routing operation. This method identifies a primary set of sub-regions that has more than one sub-region, and determines whether the primary set of sub-regions is an open set that has a sub-region that is not adjacent to any other sub-region in the set. If the primary set of sub-regions is not an open set, this method then identifies a route that connects the sub-regions in the primary set and stores the identified route for the primary set of sub-regions.

Applicants respectfully submit that Sarrafzadeh does not disclose, teach, or even suggest pre-computing routes in the manner recited in claim 1. Specifically, Sarrafzadeh does not disclose, teach, or even suggest:

- identifying a primary set of sub-regions that has more than one sub-region;

- determining whether the primary set of sub-regions is an open set that has a sub-region that is not adjacent to any other sub-region in the set; and

- if the primary set of sub-regions is not an open set, identifying a route that connects the sub-regions in the primary set, and storing the identified route for the primary set of sub-regions.

In the Office Action, the Examiner asserted that:

5   Sarrafzadeh et al. teach performing clustering to create top-clusters; it is noted that clustering is done by gathering cells or nodes into clusters that are closely related and then placed the clusters or assigned into bins or sub-regions, further placement refinement is done by further partitioning the bins into smaller bins where few cells that are closely related being assigned or placed, then routing is

10   performed; the smaller bins that are adjacent without open are used to placed cells or nodes and routes as shown in Fig. 16; the routes are then stored.

See page 3, lines 2-8 of the Office Action.

Applicants respectfully disagree with the Examiner that the above-quoted analysis renders claim 1 unpatentable. Initially, Applicants respectfully submit that Sarrafzadeh's clustering,

15   which is performed for placement (as noted by the Examiner and as illustrated in Figure 8 of Sarrafzadeh), has nothing to do with a method for pre-tabulating routes, which is what is claimed in claim 1. Moreover, claim 1 does not recite a clustering approach. Instead, it recites a method that (1) identifies a primary set of sub-regions that has more than one sub-region, (2) determines whether the primary set of sub-regions is an open set that has a sub-region that is not adjacent to

20   any other sub-region in the set, and if the primary set of sub-regions is not an open set, (3) identifies and stores a route that connects the sub-regions in the primary set. Hence, given that the claim 1 does not recite a clustering approach, the method of this claim determines whether the identified primary set is an open set, and based on this determination, it determines whether to identify and store a route for the identified primary set. If the Examiner believes that

Sarrafzadeh's placement clustering approach invalidates claim 1, Applicants respectfully request that the Examiner identify (1) when and how Sarrafzadeh determines whether an identified primary set of sub-regions is an open set, and (2) when and how Sarrafzadeh uses the results of this determination to determine whether to identify and store a route for the identified primary set of sub-regions.

Claims 2, 3, 6-8, and 11-14 are dependent directly or indirectly on claim 1. Hence, Applicants respectfully submit that these claims are patentable over Sarrafzadeh for the same reasons as described above for claim 1.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the § 102(e) rejections of claims 1-3, 6-8, and 11-14.

II.   New Claims

In this Amendment, Applicants have added method claims 15-21 and computer readable medium claim 22. Claims 16-21 are dependent directly or indirectly on claim 15. Claim 15 recites a method of pre-computing routes for nets in a layout region that is partitioned into a plurality of sub-regions. This method

- identifies a primary set of sub-regions that has more than one sub-region;

- when the primary set of sub-regions is not an open set that has a sub-region that is not adjacent to any other sub-region in the set, identifies and stores a route that connects the sub-regions in the primary set; and

- when the primary set of sub-regions is an open set, stores a set of indicia that enables the generation of a route for the primary set during a routing operation.

Claim 22 recites a computer readable medium that is analogous to the method claim 15. This computer readable medium stores a computer program for pre-computing routes for nets in a

layout region that is partitioned into a plurality of sub-regions, where the computer program comprising sets of instructions for:

- identifying a primary set of sub-regions that has more than one sub-region;

- when the primary set of sub-regions is not an open set that has a sub-region that is not adjacent to any other sub-region in the set, identifying and storing a route that connects the sub-regions in the primary set; and

- when the primary set of sub-regions is an open set, storing a set of indicia that enables the generation of a route for the primary set during a routing operation.

Applicants respectfully submit that claims 15 and 22 are patentable over Sarrafzadeh as these claims differentiate between the treatment of the open and closed sets of sub-regions when pre-tabulating routes. Claim 16-21 are patentable over Sarrafzade for at least the same reason, as they are dependent directly or indirectly on claim 15.

III.   Information Disclosure Statement

Accompanying this Amendment is the 1449 form of an Information Disclosure Statement that applicants are submitting concurrently with but separately from this Amendment. This Information Disclosure Statement lists and provides copies of several additional references for the Examiner's consideration.

CONCLUSION

In view of the foregoing, it is submitted that all pending claims, namely claims 1-22, are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance is earnestly solicited at the earliest possible date.
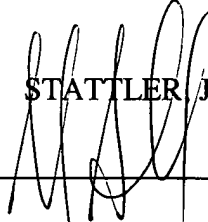
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Respectfully submitted,

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